

Chapter 3: Crude Petroleum and Natural Gas

Industry Definition

The crude oil and natural gas extraction industry (SIC 1311) comprises establishments engaged in operating oil and gas fields. Activities include exploration for crude oil and natural gas; drilling, completing, and equipping wells; and all other activities involved in making crude oil and natural gas marketable, up to the point of shipment from the producing property. This industry also includes the mining and extraction of oil from oil shale and oil sands, and the production of liquid hydrocarbons and natural gas.

Overview

Production of crude oil in the United States is expected to decline 2.2 percent in 1997 and 3.3 percent in 1998. Consumption for both years is expected to rise slightly, leading to an increase in crude oil imports. Imported crude oil prices should remain relatively stable, with expectations of a nominal 2.8 percent decrease in 1997 and a negligible decrease in 1998.

In contrast to crude oil production, natural gas production is expected to rise 1 percent in 1997 and slightly more than 2 percent in 1998. Natural gas prices, however, are expected to fall 0.4 percent in 1997 and 5.8 percent in 1998. Growth in natural gas consumption is expected to exceed production in both years and, as a consequence, imports of natural gas are expected to increase 7.8 percent in 1997 and 10.0 percent in 1998.

Global Industry Trends

Forecasting energy supply, demand, and prices is fraught with uncertainties. Currently, in world petroleum markets some of the most indeterminate of factors are those that could most affect energy markets in the years ahead. Some of these concerns involve when -- or whether -- Iraq will eventually be allowed to fully participate in world petroleum markets, or whether the Russian economy and political environment will stabilize enough so that the many billions of dollars in planned petroleum investment projects, currently on hold, can move forward. Unity of the Organization of Petroleum Exporting Countries (OPEC) is also a major determinant of future developments in the petroleum market and a factor that has resulted in wide swings in petroleum prices in the past.

Global Supply

A surprising development over recent years has been the ability of non-OPEC producers to continuously increase their oil supply. Whether that trend will continue is also uncertain. Since the global economy has experienced three war-related oil price shocks within a two-decade period, another such event occurring anytime in the future cannot be easily discounted.

Nevertheless, expectations are that most world regions will increase petroleum production. Through the year 2002,

OPEC is expected to account for most of the projected increase in world oil supply ([Table 3-1](#)). In its November 1996 meeting, OPEC agreed to freeze production levels at 25 million barrels per day for the next six months. Whether OPEC will maintain group discipline in the coming years is doubtful because recently several OPEC members--most notably, Venezuela--have greatly exceeded their production quotas. Significant increases in non-OPEC production are also expected to occur in Latin America and in the former Soviet Union (FSU).

North Sea

In the North Sea, production gains have been sizable in recent years, confounding earlier predictions that North Sea crude oil production would peak years ago. For example, between 1991 and 1996, North Sea production rose at an average annual rate of 8 percent, versus the 2 percent average annual gains realized in the 1985-1990 period. Production there is expected to peak after 2000 at slightly more than 7 million barrels per day.

Latin America

Although accounting for only 10 percent of the total output of oil in the world, Latin America has shown the greatest growth in production in recent years. That is in part due to the discovery of new fields as well as to privatizations of state-owned petroleum companies and the opening up of petroleum resources to foreign investment. Since 1985, production of Latin American oil has grown by 52 percent; but perhaps more importantly, exports of oil have grown nearly threefold. Latin America is expected to add roughly 1 million barrels per day of productive capacity through the year 2002.

Asia and the Former Soviet Union

Asia's share of total world oil production (at 11 percent) is only slightly higher than that of Latin America. However, Asia's production gains in recent years have been more modest. Further, unlike Latin America, much more of Asia's production has been directed toward rapidly growing domestic markets. China is Asia's largest oil producer outside of OPEC. Although China has greatly expanded its productive capacity in recent years, China has not been a major oil-exporting nation. Chinese oil production is expected to continue to grow during 1997, however increasing domestic consumption will largely absorb that growth. Indonesia, a member of OPEC, is Asia's second-largest producer of oil. Unlike China, however, Indonesia is a major oil-exporting nation. Also in contrast to China, Indonesian oil production peaked in 1991 and is expected to continue to decline. Moreover, growing domestic consumption should further work to reduce Indonesia's oil exports in the future.

As of 1996, the FSU was the world's third-largest oil-producing region (Saudi Arabia and the United States being first and second). Although in few areas is future crude oil supply more uncertain than in the FSU. For instance, as recently as 1992, the FSU was still the world's largest crude oil producer, producing more than 12 million barrels per day. In subsequent years, production in the FSU has fallen sharply--although it may have leveled off in recent years at slightly more than 7 million barrels per day. In the near term, the FSU's share of world oil production is expected to grow again, although it will likely stay within approximately 10 percent of total world production.

Global Demand

On the demand side, recent growth of the world's oil consumption has largely resulted from a global economic expansion that is only three years old. Oil demand depends on economic activity; hence oil consumption projections are very dependent on assumptions concerning economic growth rates. World economic activity began to expand in 1993, after two years of flat growth. World crude oil consumption stagnated between 1991 and 1993, largely the result of the economic collapse of the FSU. Since 1993, growth in world petroleum consumption has accelerated slightly (averaging slightly greater than 1 percent per year) and is expected to accelerate further (to greater than 2 percent per year) throughout the remainder of the decade.

Most of that growth has been concentrated in the Pacific Rim nations, the economies of which have grown in recent years at a considerably faster rate than have economies in the rest of the world. Asia and the Pacific Rim are expected to continue to account for most of the increase in crude oil demand in the coming years. Latin America is also expected to show sizable increases in oil consumption, as the heightened pace of economic growth that the region has realized over the past few years is expected to continue. In contrast, in the more developed markets of the Organization of Economic Cooperation and Development (OECD) countries, economic growth and growth in petroleum demand has been much more moderate and is expected to continue to be so in the future. In the FSU, Eastern Europe, and Africa, oil consumption growth is expected to trail that of the OECD.

International Long-Term Growth

Economic growth and oil supply availability will be the crucial elements affecting world petroleum markets in the years ahead. World economic growth is expected to accelerate slightly over the next five years, leading to rising petroleum consumption. For supply and demand to remain in balance thereby maintaining relatively moderate changes in the price of crude oil, the petroleum industry of the FSU would have to continue to recover; and marginal (and largely technology-driven) increases in production would have to occur among non-OPEC producers, and restrictions on Iraqi crude oil production would have to be lifted. (On December 9, 1996, the United Nations voted to allow Iraq to sell a limited volume of oil in order to pay for food, medicine, and other humanitarian needs.)

Most importantly, OPEC would need to accommodate most of the future increase in petroleum demand by raising production levels. Between 1997 and 2002, world crude oil production is expected to expand by more than 7.4 million barrels per day from the 1997 production level of 73 million barrels per day. OPEC is expected to account for 7.2 million of those added barrels per day in production.

As in the recent past, crude oil demand growth will be greatest in the Asia-Pacific region. Between 1995 and 2002, Asian nations (excluding Japan) are expected to account for more than 90 percent of the total growth in world petroleum consumption.

Demand for natural gas has grown far more rapidly than demand for crude oil in recent years. Strong worldwide demand for natural gas is projected for the forecast period (1997-2002), with demand in Asia expected to show the greatest increases. Several worldwide projects on infrastructure transportation and liquefaction have increased global trade in

natural gas, which grew by 9 percent in 1995, almost doubling trade since 1980. However, most trade in natural gas is regional, with Canada/U.S. and Russia/Western Europe accounting for 76 percent of total world trade in natural gas. Three-fourths of world gas trade is transported via pipeline, the remainder being liquefied natural gas (LNG) trade, which is predominantly Asian. (See "Opportunities in Liquefied Natural Gas.") Japan alone accounts for more than half of the world's LNG imports.

U.S. INVESTMENTS OVERSEAS

Of the world's fifteen largest petroleum companies--several of which are state-owned monopolies--five are U.S. companies. Opportunities for U.S. multinational petroleum companies to explore, develop, and produce crude oil and natural gas in many areas of the world are increasing rapidly. Since the oil price crash of 1986, the major U.S. petroleum companies have nearly doubled their foreign exploration and development spending and, since 1989, the majors' foreign expenditures often have exceeded their domestic expenditures. (See [Table 3-2.](#)) (Although some U.S. independent oil and gas companies have notable overseas oil and gas production operations, as a group, these companies' foreign activities are but a small portion of the activities of the major petroleum companies.) Recent increases in the U.S. majors' exploration and development expenditures have mostly been directed toward the North Sea and Southeast Asia.

North Sea

Currently, OECD Europe, which principally is found in the North Sea, is far and away the largest target of the major U.S. petroleum companies' overseas oil and gas exploration and development spending, accounting for about 40 percent of such expenditures in 1995. Spending by these U.S. petroleum companies on their upstream North Sea operations should continue to be strong in the years ahead. Between 1995 and 1996, North Sea production is estimated to have grown 9 percent. North Sea production should continue to climb an additional 2 percent in 1997 and subsequently start to level off in 1998. The major U.S. companies account for roughly a fourth of total North Sea production--the remainder being produced almost entirely by European companies.

Asia and the Pacific Rim

The Other Eastern Hemisphere region, which essentially is Asia and the Pacific Rim, is the second most important target of the major U.S. petroleum companies' exploration and development spending; it accounts for about 18 percent of total expenditures. Although exploration and development expenditures have held fairly steady for several years, this region may be an area of future growth, particularly because of its strong economic performance and forecasted growing petroleum consumption.

Africa

In terms of exploration and development expenditure levels, Africa accounts for 16 percent of total spending. In Africa, U.S. petroleum investment is concentrated largely in Nigeria. The U.S. majors' African exploration and development spending jumped in 1995 to more than \$2 billion dollars, with most of that money directed at Nigeria, a country expected

to show substantial growth in petroleum production in the coming years.

The U.S. companies also have operations, albeit far smaller, in Egypt, Algeria, Angola, and Zaire, as well as in other African countries.

Canada

Canada accounts for 14 percent of the U.S. majors' foreign exploration and development expenditures. Canada is currently the largest combined exporter of crude oil and natural gas to the United States. In 1995, the U.S. majors accounted for 18 percent of Canadian crude oil produced. Most of Canada's crude oil production currently takes place in the western provinces. However, one area of important future growth lies in offshore Newfoundland. Development of the Hibernia field, a \$6 billion petroleum development project, is currently underway. U.S. companies account for at least two-thirds of the Hibernia investment. Estimates of Hibernia's crude oil reserves range as high as 1 billion barrels, making Hibernia the largest North American project of its kind since the development of Prudhoe Bay in Alaska. Oil production from the Hibernia field is expected to begin in late 1997.

The growing integration of the U.S. and Canadian natural gas markets also bodes well for future U.S. investment in Canadian petroleum resources. In 1995, the major U.S. petroleum companies accounted for nearly 20 percent of Canadian natural gas production. Canada, which has more than doubled its natural gas production over the last decade, currently accounts for 13 percent of the U.S. natural gas market. Canada is expected to continue to increase its exports of natural gas to the United States in the future.

Latin America

Other Western Hemisphere, which also is known as Latin America, is an area of rapidly growing exploration and development activity for U.S. petroleum companies. Although amounting to only 7 percent of the major U.S. petroleum companies' total foreign exploration and development expenditures in 1995, the majors' Latin American exploration and development spending has grown twice as fast as their exploration and development spending in other foreign locales.

Privatization in Latin America has occurred against a backdrop of sweeping free market economic reform. Although privatization of petroleum assets in Latin America has been sporadic, some countries, such as Argentina, have embarked on very far-reaching privatization efforts; others, such as Mexico--Latin America's largest crude oil producer--have adopted only modest reforms.

Venezuela, Latin America's largest crude oil producer after Mexico, has taken a crucial step in generating serious interest: It has invited production-sharing agreements whereby investing companies take an equity interest in the oil or gas reserves developed, rather than simply hiring themselves out as service contractors. Other major producer countries in Latin America have also undertaken initiatives to encourage foreign investment in order to develop indigenous petroleum resources.

One of the most important developments in the world oil market in the late-20th century is the privatization of state

energy companies. Privatization has provided investment opportunities for U.S. petroleum companies to add crude oil and natural gas reserves of a magnitude unseen since the development of Prudhoe Bay and the North Sea. The former Communist countries of Eastern Europe and Asia present enormous opportunities to U.S. petroleum companies due to their recent efforts at opening their oil and gas resources to foreign investors. As a result of recent privatization efforts, greater opportunities also exist for U.S. investors in Europe.

Socialist and Former Socialist Regions

Many foreign investors believe that the breakup of the Soviet Union and the move toward a market-driven economy have created new exploration and production opportunities in one of the world's largest petroleum-producing regions outside of the Middle East. However, political uncertainties, legal difficulties, and concerns about property rights present large impediments to investment in the oil-producing countries of the FSU. Changing tax regimes and political complications regarding the use of pipelines--many of which cross international borders between hostile nations--have also impeded foreign investment. Bringing oil and gas to market from remote regions that have undeveloped infrastructures presents yet another challenge to investing in these regions; all of this creates a vicious cycle in light of the need these regions have for foreign investment in order to build or rebuild pipelines and seaports.

The governments of China and Vietnam are also attempting economic reform and opening their petroleum industries to foreign investment. Recent reforms in these countries include allowing exploration and development, which were previously inaccessible to foreign participation. Most of the resulting foreign investment in these countries is in the form of joint ventures and production-sharing agreements, and investment in petroleum exploration and production has proceeded at an uneven pace. As in the FSU, political uncertainty and property rights are impediments to foreign investment in these nations' petroleum resources.

Major OECD Petroleum Companies

Some of the most prominent competitors of the U.S. majors are the major petroleum companies of the OECD countries. Several of these companies have recently been privatized--most notably, British Petroleum; British Gas; Petro Canada; Elf Aquitaine and TOTAL, both of France; ENI, of Italy; and Repsol, of Spain. But unlike the major state-owned companies of the former socialist countries or state-owned companies of the nonindustrialized nations, these companies have had freer reign to pursue energy investment opportunities. Pursuit of such opportunities could, however, affect their abilities to compete with U.S.-based majors. That is especially true of those companies that have made aggressive efforts to raise investment funds abroad, particularly in the United States--the largest capital market in the world. Such a move could lower their cost of capital as well as diversify their ownership. In addition, since privatization, many of the major OECD petroleum companies have embarked on ambitious efforts to cut costs, even when layoffs have ensued--an option that was less available to management when these companies were state owned.

DOMESTIC TRENDS

Since the oil price collapse of 1986, the size of the U.S. petroleum industry has been shrinking and is now compatible with lower-priced oil. Increased productivity of U.S. exploration and development is reflected in finding costs, which have been falling for a combination of factors: There has been a general cutback in activity as well as more selective drilling, called "prospect high grading," in which only the most promising prospects are drilled. Application of advancing technologies in exploration and drilling have made many former submarginal prospects profitable. Furthermore, corporate downsizing and reorganization have also reduced operating costs.

Smaller companies have also been gaining a larger role in developing U.S. oil and gas resources. The share of oil and gas production from nonmajors increased from 39 percent of total U.S. production in the late 1980s to 48 percent in 1995. Nonmajors more than doubled their production of natural gas from offshore areas, accounting for 45 percent of U.S. production in 1995. These companies tend to drill smaller offshore fields and have faster depletion rates than the majors. These smaller companies have also been able to reduce their finding costs to levels comparable to those of the majors.

Technological Improvements

Since the late 1980s, new technologies have played a major role in increasing the ability of U.S. petroleum companies to find oil and natural gas. New technologies have also helped reduce capital outlays and operating costs at a time when petroleum prices have generally hovered around historic lows. Advanced computers and associated improvements in software have made possible three-dimensional seismic studies -- one of the major breakthroughs in exploration and development technologies. Three-dimensional seismic images have greater resolution than previous two-dimensional images and help delineate oil and gas reservoirs hidden by complex faulting. Detailed seismic surveys have, in turn, fostered the use of horizontal drilling, which is another new technology.

Most petroleum reservoirs are wider than they are deep, so wells drilled horizontally more closely follow the contours of the reservoir and expose the drilling bore to greater amounts of hydrocarbons. Drilling horizontally also allows more than one trap to drain with a single well. In the North Sea, horizontal wells are doubly effective: They increase the flow from fields that otherwise would be too slow, subsequently making them economical, and they reach reservoirs that would be too small to justify the building of a new platform. Another technological gain involves production platform designs that have made offshore fields, previously considered to be at inaccessible water depths, accessible. The Gulf of Mexico and the North Sea, once thought of as having nearly reached their productive limits, have added accessible petroleum reserves that far surpass previous expectations, in part, as a result of such technologies as 3-D seismic images, horizontal drilling, and deep-water platforms.

Factors Affecting Future Growth of the U.S. Industry

Domestic crude oil production peaked in 1970 and has since fallen by an average of 1.5 percent per year. Low returns on investment in oil and gas production operations account for much of the decline in U.S. exploration and development activity. In recent years, rates of return on such investments have been significantly and consistently less than those realized by the S&P 400's nonenergy industrial companies. Domestic crude oil production is expected to decline by 1.2

percent in 1997 and by 2.4 percent in 1998. (See Table 3-1.)

One area of domestic crude oil production that has shown some promise in recent years is the Gulf of Mexico. Offshore production (of which more than 99 percent came from the Gulf of Mexico in 1995), accounted for 21 percent of total U.S. production in 1995, compared with 15 percent in 1989. (See [Table 3-3](#).) Further, offshore Gulf of Mexico production is expected to show a sustained increase well into the future, in contrast to the Lower 48's onshore production, which is projected to decline steadily over the next two decades. Consumption of crude oil in the United States is expected to grow 0.7 percent in 1997 and 1.8 percent in 1998, largely due to increased demand for motor vehicle fuel.

Alaska accounts for 23 percent of total U.S. production in 1995. (See Table 3-3.) Alaskan production has, however, been on the decline, having produced 1.5 million barrels per day in 1995, compared with slightly more than 2 million per day at its peak in 1988. That rate of decline is expected to continue, at 6.1 percent and 6.3 percent in 1997 and 1998, respectively, a rate of decline which would greatly exceed the rate of production decline in the rest of the United States.

Domestic natural gas markets should provide another opportunity for investment in future years. In 1997 and 1998, U.S. natural gas demand is expected to grow 1.2 percent and 4.4 percent, respectively. (See [Table 3-4](#).) Future growth will come mostly from the industrial sector--in particular, electricity generation. Increases in U.S. natural gas production have lagged increases in demand in recent years, and the shortfall is expected to increase in future years leading to increased imports. (See [Table 3-5](#).) Canada is the main source for U.S. natural gas imports, accounting for 99 percent of total imports of natural gas in 1995. Imports of natural gas are expected to increase 7.8 percent in 1997 and 10.0 percent in 1998.

Domestic Long-Term Growth

In the United States, real economic growth is expected to average between 2 and 2.3 percent over the next five years (1997-2002). As in recent years, crude oil consumption (and energy demand in general) is expected to lag the expected economic growth. Crude oil consumption is forecast to grow 0.7 percent annually through the year 2002, while crude oil production is expected to decline at a slightly greater than 2 percent annual rate through that year. As a consequence, imports will account for a growing share of U.S. crude oil demand. Crude oil imports are expected to grow at a 3.7 percent annual rate through 2002, and prices should remain relatively stable between 1997 and 2002. (See [Table 3-6](#).)

In contrast to crude oil demand, natural gas consumption in the United States is expected to grow steadily in the near future. This is due in part to natural gas' relative environmental advantage over crude oil. It is also due in part to the changing cost structure of the U.S. natural gas industry and to electricity deregulation. Between 1997 and 2002, natural gas consumption in the United States is expected to outpace overall domestic energy demand, mainly because of the proliferation of gas-fired electricity generators. Natural gas consumption is expected to grow at an annual rate of 1.6 percent per year between 1997 and 2002. Prices of natural gas are expected to grow at an annual rate of roughly 2 percent--slightly more rapidly than crude oil prices but less than the overall rate of inflation. Future natural gas production is expected to lag growth in demand. As a consequence, imports of natural gas--primarily Canadian--will account for a growing share of the U.S. market. Imports of natural gas are expected to grow at slightly less than a 4-percent annualized

rate between 1997 and 2002.

Kevin Lillis, Energy Information Administration (202) 586-1395, December 1996. This chapter was prepared by the Energy Information Administration (EIA), the independent statistical and analytical agency of the Department of Energy. The information herein should not be construed as advocating or reflecting any policy position of the Department of Energy or any other organization.

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Opportunities in Liquefied Natural Gas

Demand for natural gas is expected to increase worldwide, especially in the growing economies of the Far East. Much of the expected new demand will be for electric power generation. Natural gas burns more cleanly than petroleum fuels or coal, and new gas-fired combined-cycle turbine power plants can turn heat into electricity more efficiently than other fossil fuels. The major consumers of natural gas in the Far East (Japan, South Korea, and Taiwan) are separated by oceans from the main producers (Indonesia, Malaysia, and Australia), generating an active maritime trade in liquefied natural gas (LNG). This transport requirement means that exploration and development of natural gas in the Far East is often just the first step in a complex, vertically integrated project. The natural gas provider must build a liquefaction plant, order ships and often build a harbor. At the receiving end, the provider might also build the port and re-gasification plant, and the electric power plant that will burn the natural gas.

Despite these complexities, some major U.S. companies find LNG projects attractive investment targets. Mobil has a new joint venture with Pertamina, Indonesia's state energy company. Shell has projects in Malaysia, Oman and Nigeria. In 1994, Exxon signed a joint venture with Pertamina in a project to develop an offshore gas field in the South China sea. The project would be the largest offshore natural gas development project in the world. In 1994, Enron and Qatar agreed to develop a massive new LNG project aimed at the Israeli and Indian markets. Outside Asia, Amoco signed a joint venture with British Gas, Cabot, and the Trinidad national gas company to develop a new LNG plant in Trinidad.

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RELATED CHAPTERS

Chapter 2, Coal Mining

Chapter 4, Petroleum Refining

Table 3-1. Historical and Forecasted World Oil Supply by Region, 1995-2002

(Million Barrels per Day)

	1995	1996	1997	1998	1999	2000	2001	2002
Supply								
OECD	22.28	22.90	23.04	22.58	22.25	21.83	21.57	21.37
United States	9.34	9.23	9.12	8.90	8.77	8.54	8.43	8.40
Canada	2.43	2.51	2.59	2.57	2.56	2.55	2.54	2.53
Mexico	3.19	3.27	3.32	3.26	3.23	3.19	3.18	3.16
Japan	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Australia and New Zealand	0.71	0.70	0.70	0.70	0.70	0.70	0.71	0.69
OECD Europe	6.56	7.15	7.28	7.09	6.94	6.80	6.67	6.54
Developing Countries	37.14	38.15	39.44	41.09	42.76	44.55	46.30	48.01
Other South and Central American Countries	3.07	3.20	3.25	3.44	3.64	3.86	4.02	4.10
Pacific Rim	1.95	2.00	2.02	2.05	2.08	2.11	2.15	2.18
OPEC	27.99	28.47	29.37	30.72	32.06	33.50	35.01	36.55
Other Developing Countries	4.13	4.49	4.80	4.88	4.98	5.07	5.13	5.18

Eurasia	10.31	10.39	10.56	10.53	10.61	10.65	10.88	11.05
Former Soviet Union	6.99	6.99	7.05	7.09	7.20	7.26	7.52	7.71
Eastern Europe	0.32	0.32	0.32	0.28	0.27	0.27	0.26	0.25
China	2.99	3.09	3.19	3.16	3.14	3.13	3.11	3.09
Total Production	69.73	71.44	73.04	74.20	75.62	77.03	78.75	80.43
<p>Note: Oil includes crude oil, natural gas liquids, and other hydrocarbon liquids.</p> <p>Source: U.S. Department of Energy, Energy Information Administration</p>								

Table 3-2. Exploration and Development Expenditures of Major U.S. Petroleum Companies by Region, Selected Years

(Millions of Dollars)

Region	1986	1989	1994	1995
United States				
Onshore	12,496	8,973	7,815	7,695
Offshore	4,906	6,016	4,773	4,739
Total United States	17,402	14,989	12,588	12,434
Canada	1,126	6,266	1,835	1,899
OECD Europe	3,168	3,539	4,439	5,204
Former Soviet Union and Eastern Europe	N.A.	0	297	359
Africa	1,064	1,024	1,392	2,043
Middle East	340	406	445	361
Other Eastern Hemisphere	1,186	2,284	2,758	2,430
Other Western Hemisphere	642	609	743	875
Total Foreign E&D Expenditures	7,526	14,128	11,909	13,171

N.A.: Information not available

Sources: Energy Information Administration, *Performance Profiles of Major Energy Producers 1995* DOE/EIA-0206(95) (Washington, DC, February 1997), Tables B22 and B34, and Energy Information Administration, Form EIA-28.

Table 3-3. U.S. Crude Oil Production and Natural Gas Gross Withdrawals, Selected Years

	1974	1979	1984	1989	1994	1995
Crude Oil Production	(Thousand Barrels per Day)					
Onshore Crude Oil	7,285	7,485	7,596	6,486	5,291	5,180
Lower-48 Crude Oil	7,092	6,084	5,874	4,612	3,732	3,696
Alaska Crude Oil	193	1,401	1,722	1,874	1,559	1,484
Offshore Crude Oil	1,489	1,067	1,283	1,127	1,370	1,350
Total Crude Oil	8,774	8,552	8,879	7,613	6,661	6,530
Natural Gas Gross Withdrawals	(Trillion Cubic Feet)					
Onshore Gas	19.34	17.06	15.56	16.30	18.77	18.93
Offshore Gas	3.51	4.82	4.71	4.77	4.84	4.86
Total Gas	22.85	21.88	20.27	21.07	23.61	23.79
Crude Oil Production	(Percent of Total U.S. Production)					
Onshore Crude Oil	83.0	87.5	85.5	85.2	79.4	79.3
Lower-48 Crude Oil	80.8	71.1	66.1	60.6	56.0	56.6
Alaska Crude Oil	2.2	16.4	19.4	24.6	23.4	22.7

Offshore Crude Oil	17.0	12.5	14.5	14.8	20.6	20.7
Total Crude Oil	100.0	100.0	100.0	100.0	100.0	100.0
Natural Gas Gross Withdrawals	(Percent of Total U.S. Withdrawals)					
Onshore Gas	84.6	78.0	76.8	77.4	79.5	79.6
Offshore Gas	15.4	22.0	23.2	22.6	20.5	20.4
Total Gas	100.0	100.0	100.0	100.0	100.0	100.0
Source: U.S. Department of Energy, Energy Information Administration						

Table 3-4. U.S. Consumption of Energy by Selected Sources, 1990-1998

	1990	1991	1992	1993	1994	1995	1996	1997 ²	1998 ²
Petroleum Products (million bbl per day)	16.99	16.71	17.03	17.24	17.72	17.72	18.23	18.23	18.48
Natural Gas ¹ (trillion cu. ft.)	18.72	19.04	19.54	20.28	20.76	21.58	21.99	22.25	23.23
Coal (million short tons)	895.5	887.6	892.4	925.9	930.2	958.6	995.0	1,019.0	1,025.8
Nuclear Power (quadrillion Btu)	6.16	6.58	6.61	6.52	6.84	7.18	7.17	7.24	7.34

¹Dry Natural Gas

²Forecast

Source: Energy Information Administration, *Monthly Energy Review* DOE/EIA-0384(95) (Washington, DC, March 1997), Table 1.3 and Appendix B, and Energy Information Administration, *Short-Term Energy Outlook Second Quarter 1997* DOE/EIA-0202(97/Q2) (Washington, DC, April 1997), Tables 5, 8, 9, and 10.

Table 3-5. U.S. Net ¹ Imports of Energy by Selected Sources, 1987-1998

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 ³	1998 ³
Crude Oil (million bbl. per day)	4.52	4.95	5.70	5.79	5.67	5.99	6.69	6.96	7.14	7.37	7.70	7.86
Petroleum Products (million bbl. per day)	1.39	1.63	1.50	1.38	0.96	0.94	0.93	1.09	0.75	1.05	1.14	1.31
Natural Gas ² (trillion cu. ft.)	0.94	1.22	1.28	1.45	1.64	1.92	2.21	2.46	2.68	2.69	2.90	3.19

¹Net imports equals gross imports minus gross exports

²Dry Natural Gas

³Forecast

Source: U.S. Department of Energy, Energy Information Administration

Table 3-6. Crude Petroleum and Natural Gas (SIC 1311) Trends and Forecasts

(Millions of dollars, except as noted)

	1989	1992	1993	1994	1995	1996 ¹	1997 ¹	1998 ²	Percent Change			
									95-96	96-97	97-98	89-96 ³
Industry Data												
Value of Shipments ⁴	74,664	77,316	80,569	72,453	79,072	94,333	96,974	97,653	19.3	2.8	0.7	3.4
Value of Shipments (\$92)	78,900	77,316	75,756	75,309	75,429	74,524	73,182	71,426	-1.2	-1.8	-2.4	-0.8
Total Employment (000)		174										
Production Workers (000)		64										
Average Hourly Earnings (\$)		20										
Capital Expenditures												
Product Data												
Value of Shipments ⁴	75,126	72,245	75,240	67,701	73,794	88,036	90,501	91,135	19.3	2.8	0.7	2.3
Value of Shipments (\$92)	79,388	72,245	70,787	70,370	70,482	69,636	68,382	66,741	-1.2	-1.8	-2.4	-1.9
Trade Data												

Exports												
Imports												
<div><div>¹Estimate</div><div>²Forecast</div><div>³Compound annual rate</div><div>⁴For definition of industry versus product values, see Getting the Most Out of Outlook >98"</div></div>												
Source: U.S. Department of Commerce: Bureau of the Census, International Trade Administration												